

Serial No. 09/943,308
Page 2

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps of:

periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;

identifying conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position; [and]

adaptively adjusting a brake pressure control parameter of said anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and

wherein the identified condition of degraded braking effectiveness is brake wear, and the determined apply rate is increased by a predefined factor.

2. (Original) The method of Claim 1, wherein the anti-lock brake control releases and then re-applies brake pressure at a determined apply rate upon detection of an insipient wheel lock condition, and the step of adaptively adjusting a brake control parameter includes adjusting the determined apply rate in a manner to provide an increased rate of brake pressure application.

3. Cancelled

4. (Original) The method of Claim 1, wherein the anti-lock brake control releases and then re-applies brake pressure at a determined apply rate upon detection of an insipient wheel lock condition, the method including the steps of:

Serial No. 09/943,308

Page 3

estimating a road surface coefficient of friction based on the periodically measured deceleration and brake pedal position;

determining said apply rate based on the estimated road coefficient of friction when conditions of degraded braking effectiveness are not identified; and

determining said apply rate based on the estimated road coefficient of friction and a measure of braking effectiveness degradation when the condition of degraded braking effectiveness is identified.

5. (Original) The method of Claim 4, wherein the step of determining the apply rate when the condition of degraded braking effectiveness is identified includes the steps of:

compensating the estimated road surface coefficient of friction for error due to the identified condition of degraded braking effectiveness; and

determining the apply rate based on the compensated estimate of road surface coefficient of friction and the measure of braking effectiveness degradation.

6. Cancelled

7. (Original) The method of Claim 4, wherein the identified condition of degraded braking effectiveness is fluid leakage, and the measure of braking effectiveness degradation is determined according to an estimated rate of the fluid leakage.

8. (Original) The method of Claim 4, wherein the braking system includes an adjustable brake, the identified condition of degraded braking effectiveness is mis-adjustment of said adjustable brake, and the measure of braking effectiveness degradation is determined according to a difference in wheel speeds attributable to such mis-adjustment.

9. (Original) The method of Claim 4, wherein the identified condition of degraded braking effectiveness is excessive vehicle weight, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of vehicle weight exceeds a reference weight.

Serial No. 09/943,308
Page 4

10. (Currently Amended) A method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake controller that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising:

- providing a brake pedal sensor capable of determine at least two brake pedal positions;
- periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;
- identifying conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position; [and]
- adaptively adjusting a brake pressure control parameter of said anti-lock brake controller when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and
- monitoring brake temperature to determine the degraded braking generated by brake fade.

11. (Currently Amended) A vehicle braking system comprising:
- a driver activated brake pedal;
 - a brake pedal position sensor providing a plurality of brake pedal positions for said brake pedal;
 - a brake pressure modulator operatively coupled to brakes;
 - an anti-lock brake controller that activates said brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition;
 - wherein said anti-lock brake controller periodically measures vehicle deceleration and brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;
 - wherein said anti-lock brake controller identifies conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position; [and]
 - wherein said anti-lock brake controller adaptively adjusts a brake pressure control parameter of said anti-lock brake controller when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and

Serial No. 09/943,308

Page 5

wherein the identified condition of degraded braking effectiveness is brake fading, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of brake temperature exceeds a nominal brake temperature.

12. (Currently Amended) A method of operation for a vehicle braking system including a driver activated brake pedal, a hydraulic brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps of:

periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;

identifying conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position; [and]

adaptively adjusting a brake hydraulic pressure control parameter of said anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and

wherein the condition of degraded braking effectiveness is determined by computing a rear speed difference between at least one front tire and at least one rear tire and comparing it to a pedal position dependent threshold value.

13 (New) A method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps of:

periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;

identifying conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position;

adaptively adjusting a brake pressure control parameter of said anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and

Serial No. 09/943,308

Page 6

wherein the anti-lock brake control releases and then re-applies brake pressure at a determined apply rate upon detection of an insipient wheel lock condition, the method including the steps of:

estimating a road surface coefficient of friction based on the periodically measured deceleration and brake pedal position;

determining said apply rate based on the estimated road coefficient of friction when conditions of degraded braking effectiveness are not identified; and

determining said apply rate based on the estimated road coefficient of friction and a measure of braking effectiveness degradation when the condition of degraded braking effectiveness is identified.

14. (New) A method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps of:

periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;

identifying conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position;

adaptively adjusting a brake pressure control parameter of said anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and

wherein the identified condition of degraded braking effectiveness is brake fading, and the measure of braking effectiveness degradation is determined according to an amount by which an estimate of brake temperature exceeds a nominal brake temperature.

15. (New) A method of operation for a vehicle braking system including a driver activated brake pedal, a brake pressure modulator, and an anti-lock brake control that activates the brake pressure modulator to modulate vehicle braking upon detection of an insipient wheel lock condition, the method comprising the steps of:

Serial No. 09/943,308
Page 7

periodically measuring vehicle deceleration and a brake pedal position during activation of the braking system when said insipient wheel lock condition is not detected;

identifying conditions of degraded braking effectiveness based on the periodically measured deceleration and brake pedal position;

adaptively adjusting a brake pressure control parameter of said anti-lock brake control when a condition of degraded braking effectiveness is identified so as to compensate for the identified condition; and

wherein the identified condition of degraded braking effectiveness is fluid leakage, and the measure of braking effectiveness degradation is determined according to an estimated rate of the fluid leakage.